

brous or slightly scaly, the rachis with long processes at the base of the pinnae on the adaxial side. **Sori** covered by an elongate indusium, on each side of a vein, and continuous distally.

Wet forests and rain forests, 110–900 m, Amazonas to Cuzco and Madre de Dios.

Tropical America; Old World.

This is a highly distinctive species, unusual in its pantropical distribution. In Peru, it has been most commonly collected in Loreto.

**Amazonas:** Río Marañón above Cascadas de Mayasi, *Wurdack 2015* (GH, US). Serranía de Bagua, above La Peca, *Barbour 2390* (MO). **San Martín:** Prov. Mariscal Cáceres, Tocache Nuevo, *J. Schunke V. 6905* (F, MO, US). Prov. Mariscal Cáceres, Cerro Santa Cruz, *J. Schunke V. 8036* (MO, USM). Prov. Rioja, Pedro Ruíz-Moyabamba, *D. Smith 4430* (MO). **Loreto:** Río Itaya, Soledad, *Killip & Smith 29768* (F, GH, US). Prov. Maynas, Yanamona, *McDaniel 16195* (GH). Alto Amazonas, Andoas, *Vásquez 4400* (MO). **Huánuco:** Tingo María, *Stork & Horton 9473* (F, UC, US). **Pasco:** Prov. Oxapampa, vicinity of Chequitavo, *D. Smith 5263* (MO). **Junín:** Chanchamayo Valley, *C. Schunke 8* (F, US). **Ucayali:** Prov. Coronel Portillo, between La Divisoria and El Boqueron, *Plowman & Kennedy 5768* (F, GH). **Cuzco:** Prov. Quispichanchi, Punkiri, *Vargas 15408, 16108* (GH). **Madre de Dios:** Prov. Manú, Shintuya, *Vargas 17837* (GH), *Foster et al. 3143* (GH, US).

## XI. *Stigmatopteris*

Contributed by Robbin C. Moran

*Stigmatopteris* C. Chr., Bot. Tidsskr., 29: 292. 1909. TYPE: *Polypodium flavopunctatum* Kaulf. = *Stigmatopteris rotundata* (Willd.) C. Chr. (*Aspidium rotundatum* Willd.). **Figure 11.**

*Dryopteris* subgenus *Stigmatopteris* (C. Chr.) C. Chr., Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 7, 10: 73. 1913.

### Key to Species of *Stigmatopteris*

- a. Veins free ..... b  
 b. Lamina 1-pinnate-pinnatifid ..... c

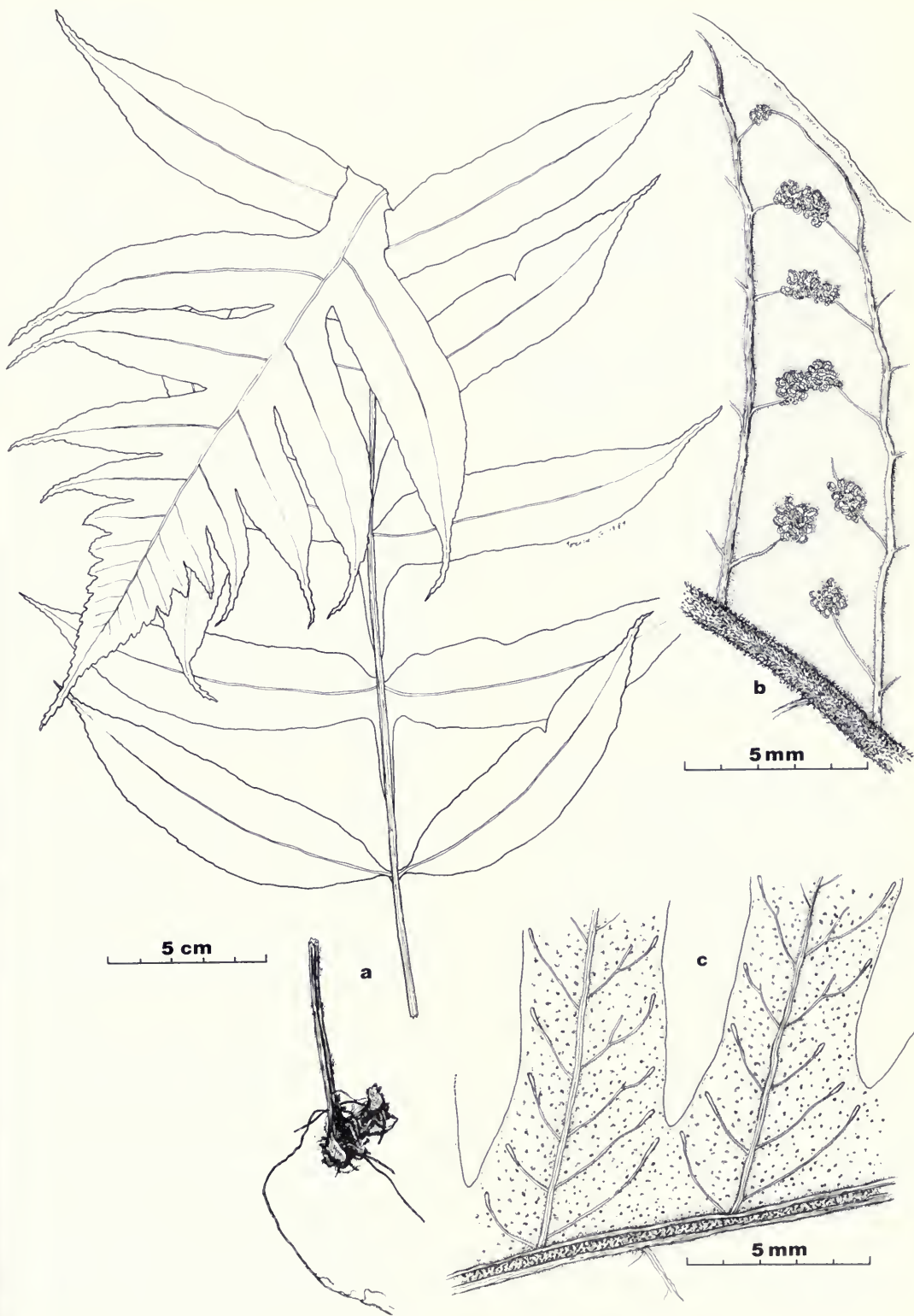
Plants terrestrial. **Stem** short-creeping to erect. **Lamina** 1-pinnate to 2-pinnate-pinnatifid, tapering to a pinnatifid apex, glabrous on both surfaces, with internal, pellucid (sometimes drying black) punctate glands. **Pinnae** commonly linear to narrowly oblong, the apices long-acuminate and serrate. **Rachis and costae** stramineous to brown, scaly, the scales thin, flaccid, usually ending in a papillose-glandular tip. **Groove** of the costae pubescent within, the trichomes less than 0.1 mm long. **Veins** free to irregularly anastomosing, curved-ascending, ending behind the margin in a clavate tip. **Sori** round or slightly oblong near the costae. **Indusium** absent, but some species with an indusiumlike scale.

The genus contains about 25 species, with distribution from southern Mexico to southeastern Brazil and the Antilles. The most distinctive feature of *Stigmatopteris* is the internal punctate glands. These glands are most easily seen when the leaf is held between the eye and a light, but are also visible under a microscope (oblique light) as tiny, raised bumps.

## References

- CHRISTENSEN, C. 1909. On *Stigmatopteris*, a new genus of ferns with a review of its species. Bot. Tidssk., 29: 291–304.
- CHRISTENSEN, C. 1913. A monograph of the genus *Dryopteris*, part 1. The tropical American pinnatifid-bipinnatifid species. Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 7, 10: 53–282.
- CHRISTENSEN, C. 1920. A monograph of the genus *Dryopteris*, part 2. The tropical American bipinnate-decompound species. Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 8, 6: 1–132.

FIG. 11. *Stigmatopteris heterophlebia*: a, habit; b, portion of pinna, abaxial side. *Stigmatopteris pellucidopunctata*: c, portions of pinna segments, adaxial side. (a, b from Moran 3165, Costa Rica, F; c from Brant et al. 1679, Colombia, F.)



- c. Pinnae cut ca.  $\frac{3}{4}$  to the costa . . . . . 1. *S. pellucidopunctata*
- c. Pinnae entire or cut less than  $\frac{1}{4}$  to the costa . . . . . 2. *S. longicaudata*
- b. Lamina 2-pinnate-pinnatifid . . . . . 3. *S. lechleri*
- a. Veins anastomosing . . . . . d
- d. Rachis and costae densely puberulent . . . . . 4. *S. heterophlebia*
- d. Rachis and costae lacking trichomes . . . . . 5. *S. opaca*

1. *Stigmatopteris pellucidopunctata* (C. Chr.) C. Chr., Bot. Tidsskr. 29: 304. 1909. **Figure 11c.**

*Polypodium macrophyllum* Hooker, Sp. fil. 4: 241. 1862, *nom. illeg.*, not (Blume) Mett. 1856. TYPE: Peru, San Martín, Mt. Guayrapurima, August 1856, *Spruce 4720* (holotype,  $\kappa!$ ; isotypes,  $\text{BM!}$ ,  $\text{G!}$ ,  $\text{P!}$ ,  $\text{US!}$ ; photos, F, GH, MO, NY, all of  $\text{BM!}$ ).

*Dryopteris pellucido-punctata* C. Chr., Index fil. 283. 1905, *nom. nov.* for *P. macrophyllum* Hooker and with the same type.

**Lamina** 1-pinnate-pinnatifid. **Pinnae** 20–40 cm long and 2.5–6 cm broad, 15–20 pairs, cut ca.  $\frac{2}{3}$  to the costa, sessile or the basal ones short-stalked, the stalk 2–7 mm long. **Segments** 4–10 mm broad, serrate at the apex, the margins entire, serrate or lobed. **Rachis and costae** stramineous or brown, scaly, the scales ovate, lanceolate or filiform. **Veins** free, 7–14 per segment, unbranched or 1-forked with a short acroscopic branch bearing the sorus. **Sori** round.

Wet forests, 200–600 m, Amazonas, San Martín, Huánuco, Pasco, and Madre de Dios.

Colombia; Ecuador; Peru; Bolivia.

This species closely resembles *S. ichtiosma* (Sodi-ro) C. Chr., a species known only from the western cordillera of Ecuador but which eventually may be found in Peru. It differs from *S. pellucido-punctata* by the presence of a small, scalelike indusium associated with the sorus and having only lanceolate scales on the axes (i.e., it lacks filiform scales).

**Amazonas:** Prov. de Bagua, Quebrada Tambillo (below km 280 of Marañón road), valley of Río Marañón above Cascadas de Mayasí, *Wurdack 2002* (GH, US, USM). **Huánuco:** Fundo Chela, Sinchono, *Aguilar 927* (USM). **Pasco:** Paujil, near Puerto Bermúdez, *León 311* (USM). **Madre de Dios:** Prov. Manú, Atalaya, vicinity of Hacienda Amazonia, 2–3 km W of village, *Foster & Wachter 7437* (MO, USM).

2. *Stigmatopteris longicaudata* (Liebm.) C. Chr., Bot. Tidsskr. 29: 300. 1909.

*Polypodium longicaudatum* Liebm., Kongel. Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 5, 1: 209. 1849. LECTOTYPE (designated by A. R. Smith, Fl. Chiapas, part 2: 213. 1981); Mexico, Veracruz, Baranca de Huitamalco, *Liebmann Flora Mex. 737* (c—Folio Herbarium; ISOLECTOTYPE,  $\kappa!$ ). *Dryopteris longicaudata* (Liebm.) Maxon, Contr. U.S. Natl. Herb. 13: 18. 1909.

**Lamina** 1-pinnate. **Pinnae** mostly 14–20 cm long and 2.0–2.5 cm broad, linear to narrowly lanceolate, 12–20 pairs, the margins entire or with crenate lobes cut less than  $\frac{1}{4}$  to the costae, the upper pinnae adnate to the rachis with a conspicuous decurrent tapering basal wing, lower pinnae free, subsessile or stalked, the stalk 2–5 mm long. **Rachis and costae** glabrous to densely scaly, the scales ovate to lanceolate, or (in Venezuela, Peru, and Bolivia) linear and fibrillose. **Veins** free, 3–6 per segment. **Sori** round, filiform scales present among the sporangia in plants from Venezuela, Peru, and Bolivia.

Wet forests, 220–2100(–2500) m, San Martín, Huánuco, Junín, Ucayali, Cuzco, and Madre de Dios.

Southern Mexico; Guatemala; Costa Rica; Panama; Venezuela; Peru; Bolivia.

This species is distinctive in its decurrent, tapering wings from the pinna bases, which are usually confluent in the distal  $\frac{1}{2}$  to  $\frac{1}{3}$  of the lamina.

**San Martín:** Mt. Guayrapurima, near Tarapoto, *Spruce 4012* (BM, G,  $\kappa$ , P). **Huánuco:** Tingo María, *Tryon & Tryon 5330* (BM, F, GH). **Junín:** E of Quimiri Bridge, near La Merced, *Killip & Smith 23906* (NY, US). Ridge E of Tingo María, *Allard 22558* (us). **Ucayali:** Prov. Coronel Portillo (as Loreto), Sinchono, cerca de la Divisoria, *Aguilar 861* (GH, USM). Sinchono (as Loreto), entre Tingo María y Pucallpa, *Aguilar 865* (GH). **Cuzco:** Prov. Paucartambo, Cosñipata Valley, Río Tono, first foothill ridge on road N of Patria, *Wachter et al. 200* (F). **Madre de Dios:** Prov. Manú, Cerro de Pantiacolla, Río Palotoa, 10–15 km NNW of Shintuya, transect to ridgetop, *Foster et al. 10908* (F). Parque Nacional del Manú, Cocha Cashu Biological Station, *Foster P-84-91* (F).

3. **Stigmatopteris lechleri** (Mett.) C. Chr., Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 8, 6: 28. 1920.

*Phegopteris lechleri* Mett., Fil. lechl. 2: 25. 1859. TYPE: Peru, Puno, "St. Gaban" (San Gabán), *Lechler 2497* (holotype, B!; frag., BM!).

*Polypodium punctatum* Hooker, Sp. fil. 4: 262, 1862, *nom. illeg.*, not (L.) Swartz, 1802. LECTOTYPE (designated by Christensen, Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 7, 10: 79. 1913); Peru, San Martín, Tarapoto, Mt. Guayrapurima, August 1856, *Spruce 4719* (K!; ISOLECTOTYPES, G!, P!; photos, F, MO of K).

*Polypodium prasinum* Baker, Syn. fil. 312. 1867, *nom. nov.* for *Polypodium punctatum* Hooker and with the same type.

*Dryopteris prasina* (Baker) C. Chr., Index fil. 285. 1905.

*Stigmatopteris prasina* (Baker) C. Chr., Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 7, 10: 79. 1913.

*Stigmatopteris ecuadorensis* C. Chr., Kongel. Danske Vidensk. Selsk. Skr. Naturvidensk. Afd., ser. 8, 6: 29. 1920. TYPE: Ecuador (Andes of Quito), *Sodirol* (holotype, B!; isotypes, BM!, P).

**Lamina** 2-pinnate-pinnatifid. **Pinnae** 25–40 cm long and 5–15 cm broad, widest at the base. **Pinnales** 4–10 cm long and 1.0–2.3 cm broad, narrowly lanceolate-triangular, sessile to broadly adnate and decurrent, the lobes oblong to rectangular, entire to serrate apically. **Rachis and costae** stramineous or brown, scaly, the scales linear or narrowly triangular, tortuous, fibrillose. **Veins** unbranched or rarely (in the larger segments) branched, nearly reaching the margin. **Sori** round.

Wet forests, 200–1700 m, San Martín, Huánuco, Pasco, and Puno.

Costa Rica; Venezuela; Colombia; Ecuador; Peru.

This species, with its 2-pinnate-pinnatifid lamina, is the most finely divided in the genus.

**Huánuco:** 25 km NE of Tingo María, La Divisoria, *Moran 3696* (MO, USM). **Pasco:** Prov. Oxapampa, Gran Pajonal, north of Chequitavo, *D. Smith 5082* (MO).

4. **Stigmatopteris heterophlebia** (Baker) R. C. Moran, *comb. nov.* **Figure 11a–b.**

*Polypodium heterophlebium* Baker, J. Bot. 22: 363. 1884. TYPE: Costa Rica, Prov. unknown, Laguna, 305 m, *Harrison 59* (holotype, K!).

*Dryopteris heterophlebia* (Baker) C. Chr., Index fil. 270. 1905.

**Lamina** 1-pinnate. **Pinnae** 10–16(–18) cm long and 2.5–3.5(–4.5) cm broad, widest at or near the base, the margins entire to crenate, the base adnate and decurrent to or nearly to the next pinna pair, free pinnae pairs 1–3, the basal pinnae usually somewhat reduced, widest near the middle, stalked, the stalk 2–4 mm long. **Rachis and costae** tan, light brown, or stramineous, puberulent and scaly, the hairs less than 0.1 mm long, erect, capitate-glandular (when fresh), the scales to 3 mm long, lanceolate, not fibrillose. **Veins** anastomosing irregularly. **Sori** discrete or confluent where the veins anastomose.

Wet forests, 100–1900 m, Loreto.

Nicaragua to Peru.

Differing from the closely related *S. alloeopectera* (Kunze) C. Chr., which grows in Venezuela and Colombia, by the glandular hairs on the axes and fewer pinna pairs.

**Loreto:** Santa Rosa, lower Río Huallaga below Yuriaguas, *Killip & Smith 28984* (NY).

5. **Stigmatopteris opaca** (Baker) C. Chr., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Afd., ser. 7, 10: 78. 1913.

*Meniscium opacum* Baker, J. Bot. 166. 1877. TYPE: Ecuador, Andes of Quito, *Sodirol 5413* (holotype, K!; photos, BM, GH, US, all of K).

*Polypodium oligophlebium* Baker, Syn. fil. ed. 2, 506. 1874, *nom. illeg.*, not Kunze, 1850. TYPE: Peru, San Martín, Tarapoto, Cerro de Guayrapurima, *Spruce 4653* (holotype, K!).

*Dryopteris christii* C. Chr., Index fil. 257. 1905, *nom. nov.* for *Meniscium opacum*, and with the same type, not *Dryopteris opaca* (Don) C. Chr. 1905.

*Dryopteris paucinervata* C. Chr., Index fil. 283. 1905, *nom. nov.* for *Polypodium oligophlebium* Baker, and with the same type.

**Lamina** 1-pinnate, opaque, the internal glands not visible. **Pinnae** 12–27 cm long and 3–5 cm broad, widest at or just above the base, the margins entire to crenate, the base sessile, the upper pinnae with a short decurrent base, the basal pinnae nearly equalling the above pinnae, widest near the middle, sessile. **Rachis and costae** lacking hairs, scaly, the scales lanceolate to linear or amorphous. **Veins** anastomosing, those of the sterile leaf with a single excurrent vein projecting from the apex where the two lateral veins join. **Sori** round, oblong, or arcuate.



FIG. 12. *Cyclodium trianae*: a, lamina; b, stem and petiole base. *Cyclodium meniscioides* var. *meniscioides*: c, lamina apex; d, fertile pinna; e, sori. (a, b from *Ellenberg 3257*, Ecuador, GH; c, d from *Fiebrig 6344*, Paraguay, F; e from *Schunke V. 5610*, F.)